

Onboard Navigation Rendezvous Expert System

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The Onboard Navigation rendezvous expert system is designed to aid the ground flight controller in monitoring the shuttle onboard navigation system. The system is designed to keep track of the navigation sensors and relative state vectors. In addition, the system also keeps an event log and fills out forms usually handled by the flight controller. This expert system is one of the few rendezvous specific systems being developed for the Mission Control Center.

The expert system has been in development for six years. Through these years the system has seen hardware, software, and personnel changes. Initial development was done by the Information Systems Directorate (ISD) and Mission Operations Directorate (MOD) at Johnson Space Center. As of October 1, 1991 the system has been turned over to MOD.

The system is completely developed except for some minor adjustments to the user interface. The rule base is in the verification stage with total certification of the system due to be completed by May 1992.

Test cases for verification are obtained by saving data used for flight controller integrated simulations. The actual data comes from both the shuttle mission simulator and the Mission Control Center Computer. So far no actual flight data has been available.

This paper covers all aspects of the system from the development history to the current hardware, software, and use of the system.